Technical Document 2960
May 1997

Accomplishment Report for Fiscal Year 1996
NRaD Detachment, Philadelphia

Naval Command, Control and
Ocean Surveillance Center
RDT&E Division

San Diego, CA
92152–5001

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Ocean Surveillance Center
RDT&E Division

San Diego, CA
92152–5001

NAVAL COMMAND, CONTROL AND OCEAN SURVEILLANCE CENTER RDT&E DIVISION
San Diego, California 92152–5001

H. A. WILLIAMS, CAPT, USN
Commanding Officer

R. C. KOLB
Executive Director

ADMINISTRATIVE INFORMATION

The work detailed in this report was performed for the Naval Space and Warfare Systems Command, the Naval Air Systems Command, and the Office of Naval Intelligence by the Naval Command, Control and Ocean Surveillance Center RDT&E Division (NRaD) Detachment, Philadelphia (NRaD DIV DET).

Released under authority of
F. R. Wahler, Director
of C^2I Systems, Philadelphia

REPORT DOCUMENTATION PAGE

Form Approved
OMB No. 0704-0188

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE	3. REPORT TYPE AND DATES COVERED
	May 1997	Final: October 1995 – September 1996

4. TITLE AND SUBTITLE

ACCOMPLISMENT REPORT FOR FISCAL YEAR 1996
NRaD Detachment, Philadelphia

5. FUNDING NUMBERS

6. AUTHOR(S)

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

Naval Command, Control and Ocean Surveillance Center (NCCOSC)
RDT&E Division Detachment, Philadelphia (NRaD DIV DET)
700 Robbins Avenue, Building 2B
Philadelphia, PA 19111–5098

8. PERFORMING ORGANIZATION REPORT NUMBER

TD 2960

9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)

Commander, Space and Naval Warfare Systems Command
2451 Crystal Drive
Arlington, VA 22245–5200

Commander, Naval Air Systems Command
1421 Jefferson Davis Hwy
Arlington, VA 22243–5120

Director, Office of Naval Intelligence
4251 Suitland Rd
Washington, DC 20395–5720

10. SPONSORING/MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION/AVAILABILITY STATEMENT

Approved for public release; distribution is unlimited.

12b. DISTRIBUTION CODE

13. ABSTRACT (Maximum 200 words)

NRaD DIV DET is responsible for a program of development, in-service engineering, procurement, installation support, configuration control, and integrated logistics support for shipboard and shore-based Command, Control, Communications, Computer and Information (C^4I) Systems intelligence processing systems, mission planning systems, and electronic photographic processing systems. NRaD DIV DET provides technical support to both the Space and Naval Warfare and Naval Air Systems Commands and the Office of Naval Intelligence. Headed by a Senior Civilian, NRaD DIV DET is comprised of 36 Civilians including Engineers, Computer Specialists, Intelligence Operations Specialists, Technicians, Logisticians, and Management Support personnel, practicing Total Quality Management and ensuring the Quality Process is routinely used. Engineering and Technical Support is provided by 145 contractor personnel. This report cites awards and recognition received by NRaD DIV DET during Fiscal Year 1996.

14. SUBJECT TERMS

Mission area: Command, Control, Communications, Computer and Information (C^4I)
management support
technical accomplishments

15. NUMBER OF PAGES

16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
UNCLASSIFIED	UNCLASSIFIED	UNCLASSIFIED	SAME AS REPORT

21a. NAME OF RESPONSIBLE INDIVIDUAL	21b. TELEPHONE *(include Area Code)*	21c. OFFICE SYMBOL
F. R. Wahler	(215) 214–8100	Code D4203

INITIAL DISTRIBUTION

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Customer

Satisfaction

Is

Our

Only

Product...
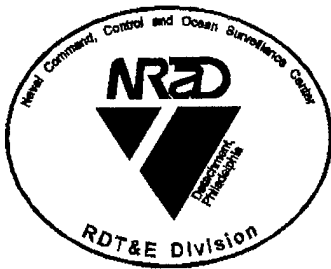
INTRODUCTION

The Naval Command, Control and Ocean Surveillance Center Research, Development, Test and Evaluation Division (NRaD) Detachment, Philadelphia (NRaD DIV DET) was established in October 1993. NRaD DIV DET's parent command is located in San Diego, California.

NRaD DIV DET is responsible for a program of development, in-service engineering, procurement, installation support, configuration control, and integrated logistics support for shipboard and shore-based Command, Control, Communications, Computer and Information (C^4I) Systems intelligence processing systems, mission planning systems, and electronic photographic processing systems. NRaD DIV DET provides technical support to both the Space and Naval Warfare and Naval Air Systems Commands and Office of Naval Intelligence. During Fiscal Year 1996, the principal customers of NRaD DIV DET were:

+ Commander, Space and Naval Warfare Systems Command

  ❖ Integrated Command, Control, Communications, Computers and Intelligence (C^4I) Systems Directorate (PD-70)

  ❖ Depot Maintenance Interservice Support Office (Code 10-14B)

+ Commander, Naval Air Systems Command

  ❖ Program Executive Officer, Cruise Missiles Project and Unmanned Aerial

  ❖ Vehicles Joint Project Office

    ✧ Command and Control Program Office (PMA-281)

    ✧ Surface Ship Cruise Missiles Program Office (PMA-282)

  ❖ Program Executive Officer Tactical Aircraft Programs Office

    ✧ Tactical Aircraft Mission Planning System Program Office (PMA-233)

    ✧ F-14 Program Office (PMA-241)

+ Office of Naval Intelligence, Systems Directorate (Code 7)

Headed by a Senior Civilian, NRaD DIV DET is comprised of thirty-six Civilians including Engineers, Computer Specialists, Intelligence Operations Specialists, Technicians, Logisticians, and Management Support personnel, practicing Total Quality Management and ensuring the Quality Process is routinely used. Engineering and Technical Support is provided by one hundred forty-five Contractor Personnel.

The internal organization is shown in the Organizational Chart, Figure 1. Principles of Operation, Figure 2, depicts the central organizing principle of NRaD DIV DET: satisfying its customers.

NRaD DIV DET LOCATION AND FACILITIES

Location: NRaD DIV DET is currently located in Building 76 at the corner of Fourth Street and Porter Avenue, on Philadelphia Naval Business Complex (formerly U.S. Naval Base) Philadelphia. Plans are to relocate to Buildings 2 and 7, Naval Inventory Control Point (NAVICP), 700 Robbins Ave., Philadelphia, PA, early in 1997.
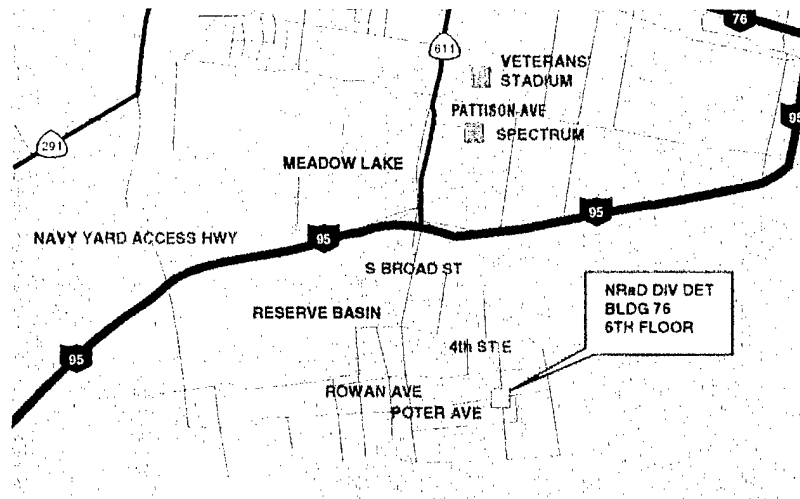
Map to NRaD DIV DET Philadelphia Facilities
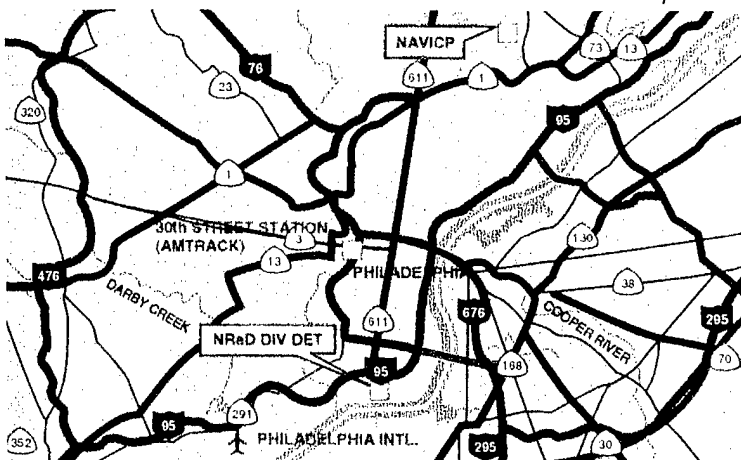
Relationship of Old and New Locations

Facilities: NRaD DIV DET currently occupies 47,100 square feet of Building 76, comprised of four Data Processing Laboratories, a Data Base Support Facility, System Integration Area, Sensitive Compartmented Information Facility (SCIF), warehouse and personnel support areas. The relocation to NAVICP will result in a 45 percent reduction in overall space but will be a more modern and accommodating facility.
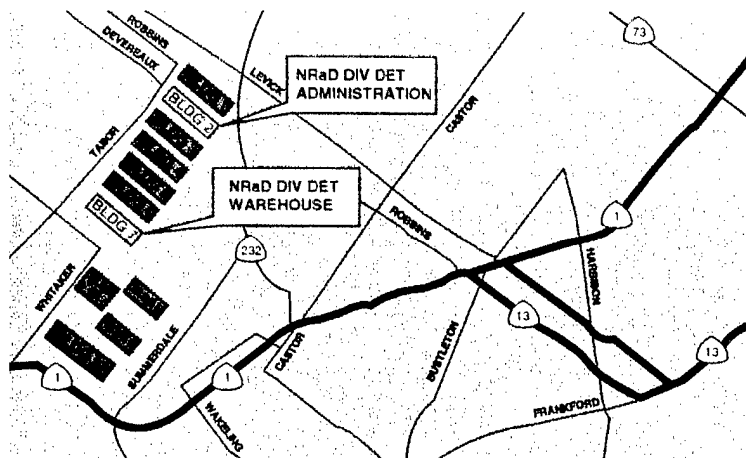
New Facilities at NAVICP

2

Fred Wahler greets Captain Harold "Hal" A. Williams, USN Commanding Officer, NRaD, San Diego, CA
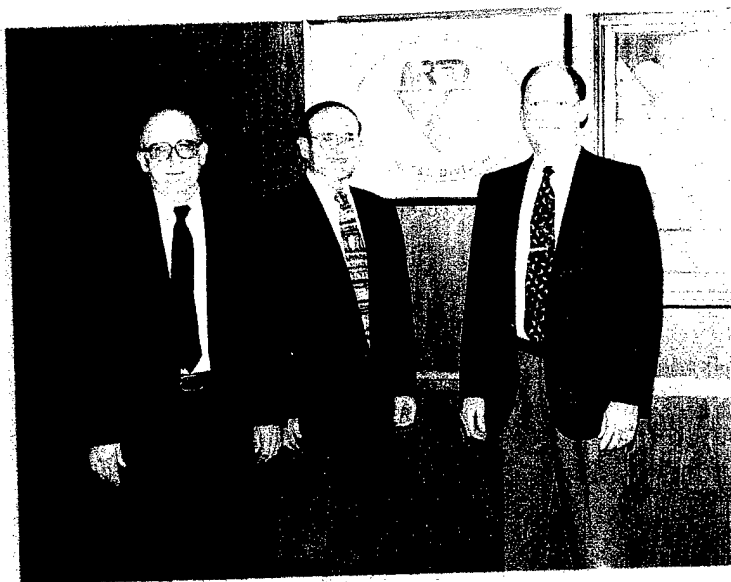
Fred Wahler greets Mr. Rod Smith, Acting Code 40, Department Head, and Dr. Richard Jaffee, Code 42 Division Head, from NRaD during a recent visit.

OFFICE OF THE DIRECTOR

Fred R. Wahler
Director

Resource Manager

Francis D. Donaghy

— Gloria Rufus
— Rhea Feldman
— Eileen Nikander

Safety Officer

Wayne Lombardo

Secretary

Betty Kriegel

Security Officer

Jim Barnes

Hardware Engineering
Branch

William J. Nork
Branch Head

Mark Cunningham
Michael J. Denham
Vincent Di Cristofaro
Allan Gaidis
Stephen Hoshowsky
Stephen Kubicki, Jr.
Wayne F. Lombardo
Paul Meisinger
Theodore Morrison
James A. Steib
Edward Zantek

Technical Support
Branch

Stephen P. Fox
Branch Head

James Kitts
Karen Levine
Eddie Smith
C. Tim Urbanski

Software Engineering
Branch

Vivian Di Cristofaro
Branch Head

Anthony Brancato
Joel A. Cohen
Louis Di Girolamo
Robert C. Flipse
Francis Greco
Robert D. Overholt, Jr.

Logistics Branch

Dennis J. Rozanski
Branch Head

James Barnes
Joseph F. Di Pardo
Judy Jolly
Dean Kralle
Paul Steinbacher

Figure 1. NRaD DIV DET Organization Chart
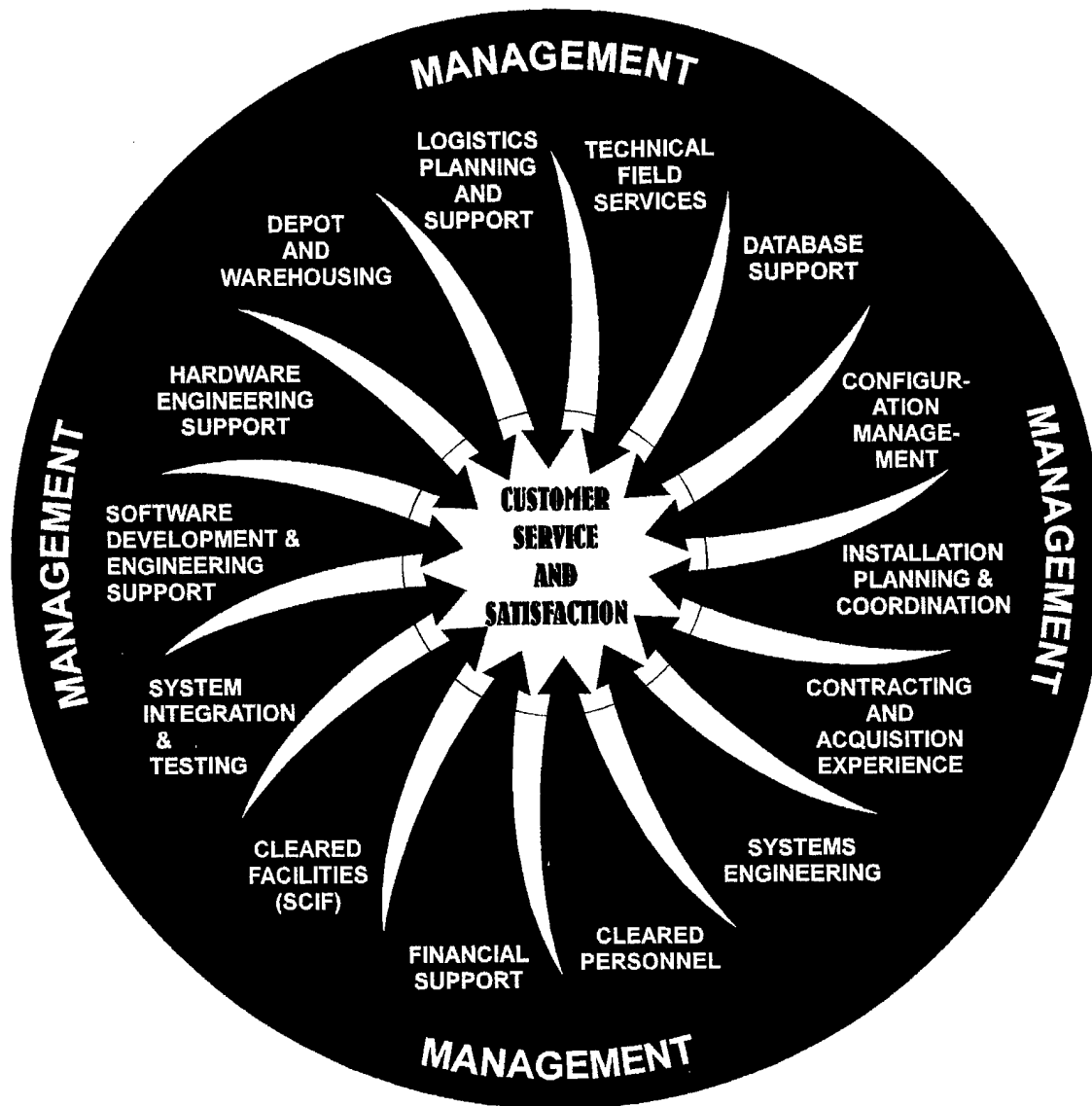
Figure 2. Principles of Operation

Awards and Recognition

Fred Wahler presents Mark Cunningham with his commendation.

Mark Cunningham, member of the Hardware Engineering Branch, receives a Meritorious Unit award.

Mr. Rod Smith, Acting Code 40 Department Head, Dr. Richard Jaffee, Code 42 Division Head, and Fred Wahler, Director, NRaD DIV DET, presents Allan Gaidis with his commendation.

Allan Gaidis, member of the Hardware Engineering Branch, receives a Meritorious Unit award.

Mr. Rod Smith, Acting Code 40
Department Head, Dr. Richard Jaffee,
Code 42 Division Head, and Fred
Wahler present Dean Kralle with his
commendation.

*Dean Kralle, member of the Logistics Branch,
receives a Meritorious Unit commendation
from the Secretary of the Navy for his
performance at the Philadelphia Naval
Shipyard.*

Fred Wahler presents Jim Barnes with
his Letter of Appreciation.

*Jim Barnes, member of the Logistics Branch, receives
a Letter of Appreciation from RADM B.D. Strong,
USN, Program Executive Officer, Cruise Misiles and
Joint Unmanned Aerial Vehicles, for his role in
establishing the Federal Express Premium Service
System in support of the Tomahawk Mission Planning
Systems.*

Mr. Rod Smith, Acting Code 40 Department Head, Dr. Richard Jaffee, Code 42 Division Head, and Fred Wahler present Dean Kralle with his Letter of Appreciation.

Dean Kralle, member of the Logistics Branch, receives his Letter of Appreciation.

Mr. Rod Smith, Acting Code 40 Department Head, Dr. Richard Jaffee, Code 42 Division Head, and Fred Wahler present Dennis Rozanski with his Letter of Appreciation.

Dennis Rozanski, Head of the Logistics Branch, receives a Letter of Appreciation from RADM B.D. Strong, USN, Program Executive Officer, Cruise Missiles and Joint Unmanned Aerial Vehicles, for his role in establishing the Federal Express Premium Service System in support of the Tomahawk Mission Planning Systems.

Fred Wahler presents Stephen Kubicki
with his Letter of Appreciation.

*Stephen Kubicki, member of the Hardware
Engineering Branch, receives a Letter of
Appreciation from Mr. Don Kiernan, Manager,
PRC, Inc., for his assistance in the accreditation of
the Sensitive Compartmented Information Facility
at their new facility in West Conshohocken.*

Mr. Rod Smith, Acting Code 40
Department Head, Dr. Richard Jaffee,
Code 42 Division Head, and Mr. Fred
Wahler present Rich Snow with his
Letter of Appreciation.
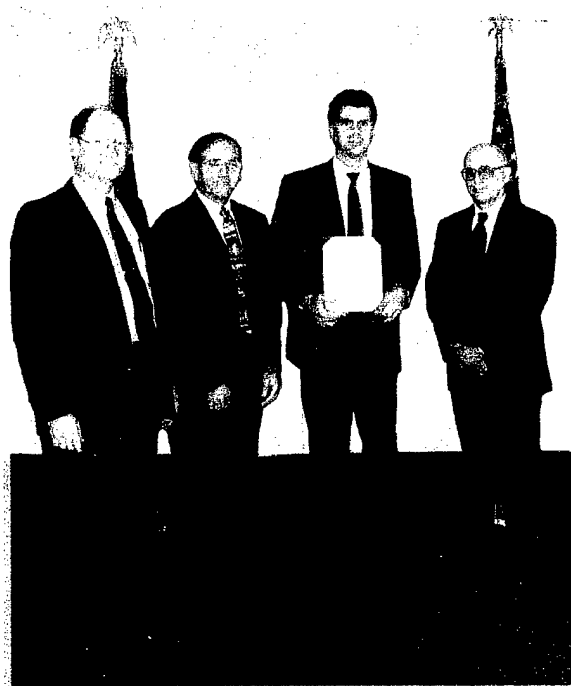
*Rich Snow, member of the C4I Product and Customer
Support Group, Code 4222, NRaD, receives a Letter
of Appreciation from CAPT R. K. Hull, USN,
Program Manager, Navy Command and Control
systems, for his achievements in support of NTCS-A
systems.*

Mr. Fred Wahler presents Tim Urbanski with his Letter of Appreciation.
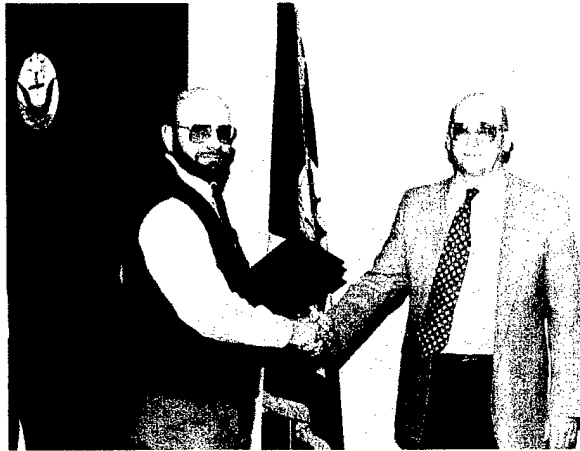
Tim Urbanski, member of the Technical Support Branch, receives a Letter of Appreciation from CAPT R.E. Riera, USN, F-14 Program Manager, for his technical support to the F-14 Tactical Airborne Reconnaissance Pod System, Digital Imaging Project.

Mr. Rod Smith, Acting Code 40 Department Head, Dr. Richard Jaffee, Code 42 Division Head, and Mr. Fred Wahler present Rich Snow with his award.

Rich Snow, member of the C4I Product and Customer Support Group, Code 4222, NRaD, receives a Navy Award of Merit for Group Achievement from CAPT H. A. Williams, USN, Commanding Officer, NRaD, for his participation in the Navy Tactical Command System - Afloat Version 2.2 Tiger Team effort.

Mr. Rod Smith, Acting Code 40
Department Head, Dr. Richard Jaffee,
Code 42 Division Head, and Mr. Fred
Wahler present Steve Hoshowsky with
his certificate.

*Steve Hoshowsky, member of the Hardware
Engineering Branch, receives his Defense
Acquisition Workforce Improvement Act (DAWIA)
Certificate for Systems Planning, Research
Development and Engineering, Level III.*

Mr. Fred Wahler presents Steve Kubicki
with his Career Service Award.

*Steve Kubicki, member of the Hardware Engineering
Branch, receives his Thirty Year Career Service
Award.*

Mr. Fred Wahler presents Louis Di Girolamo with his Career Service Award.

Louis Di Girolamo, member of the Software Engineering Branch, receives his Twenty-Five Year Career Service Award.

Mr. Fred Wahler presents Joel Cohen with his Career Service Award.

Joel Cohen, member of the Software Engineering Branch, receives his Twenty Year Career Service Award.

Mr. Fred Wahler presents Stephen Fox with his Career Service Award.

Stephen Fox, Head of the Technical Support Branch, receives his Twenty Year Career Service Award.

Mr. Fred Wahler presents Betty Kriegel with her Career Service Award.

Betty Kriegel, Secretary to the Director, receives her Twenty Year Career Service Award.

Mr. Fred Wahler presents Mark Cunningham with
his Career Service Award.

*Mark Cunningham, member of the Hardware Engineering Branch,
receives his Fifteen Year Career Service Award.*

Mr. Fred Wahler presents Karen Levine with her Career
Service Award.

*Karen Levine, member of the Technical Suppot Branch, receives her Fifteen
Year Career Service Award.*

Management Support
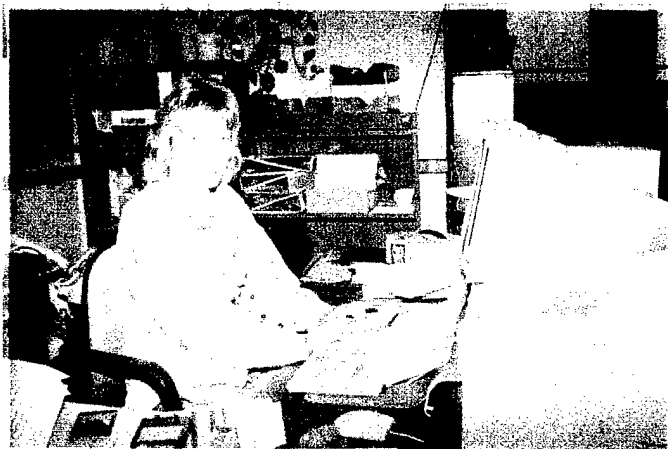
Betty Kriegel - Administration

Jim Barnes - Security
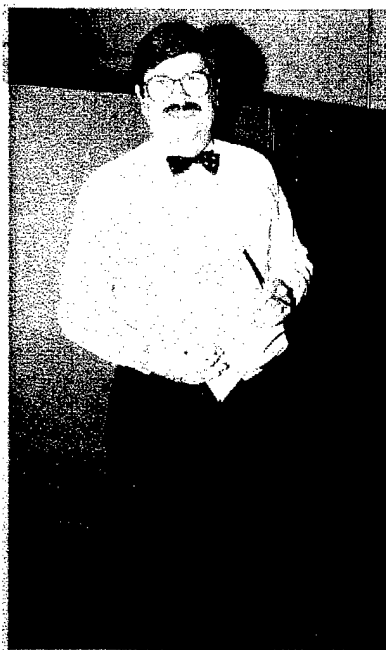
Don Donaghy - Resource Manager

Gloria Rufus - Budget

Administration and Acquisition Support

IN   OUT

The overall level of effort in support of NRaD DIV DET requirements continued its upward trend in FY96. Stub count was up by nearly 19%. Procurement actions, 6% above FY95, increased in value from $18 to $24 million, reflecting NRaD DIV DET's increase in Total Obligating Authority (TOA) for procurement and support as heretofore developing programs evolved to the field installation and deployment phase. In support of acquisition reform, BANKCARD purchases were employed to an increasing degree as cardholders and requestors became better educated to the card's flexibility and ease of use. A major multi-claimant engineering support contract was successfully recompeted and several logistics support initiatives were also brought under contract.

Administrative support to project field services operations intensified as message traffic, shipping orders, and transfer of classified materials all increased dramatically. These additional efforts were realized by improved internal procedures and efficiencies gained through experience and increased automated support.

In FY96, NRaD DIV DET support personnel processed the documents shown in the table below.

ADMINISTRATIVE WORKLOAD FY96

PURCHASE REQUISITIONS	878
REQUISITION STUBS	2,495
BANKCARD TRANSACTIONS	318
MILSTRIPS	261
FedEx BILLS OF LADING	1,380
INVOICES CERTIFIED FOR PROMPT PAYMENT	687
NUMBER OF ITEMS ON INVOICES CERTIFIED	1,947
TRAVEL ORDERS	713
CORRESPONDENCE	85
TRAINING DOCUMENTS	25
MESSAGES	2,415
SHIPPING DOCUMENTS (1149'S)	2,611
CLASSIFIED DOCUMENTS AND OTHER MEDIA	1,373
HELD	80
DESTROYED	13
TRANSMITTED	1,280

NRaD DIV DET Philadelphia

FY96 Funding

By Appropriation

TOA: $40,019,194

Legend:
- AIRCFTPROC $1,500,000
- FMS $38,244
- OPS&MAIN $6,025,143
- OTHERPROC $14,244,480
- RDTE $14,682,322
- SCN $1,754,110
- WEPSPROC $1,774,895

Pie chart labels:
- AIRCFTPROC 4%
- FMS 0.09%
- OPS&MAIN 15%
- OTHERPROC 36%
- WEPSPROC 4%
- SCN 4%
- RDTE 37%
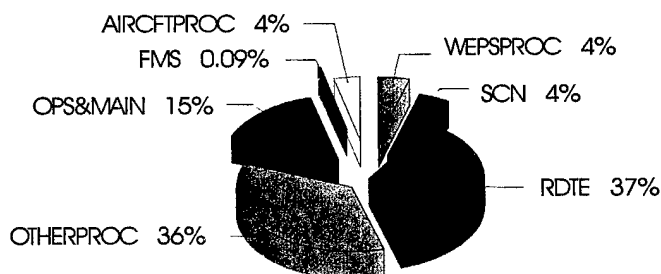
NRaD DIV DET Philadelphia

FY96 Funding

By Sponsor

TOA: $40,019,194

NAVAIR	$33,160,962
SPAWAR	$3,787,825
OTHERNAVY	$2,286,144
OTHERDOD	$784,263

OTHER DOD 2%
OTHER NAVY 6%
SPAWAR 9%
NAVAIR 83%
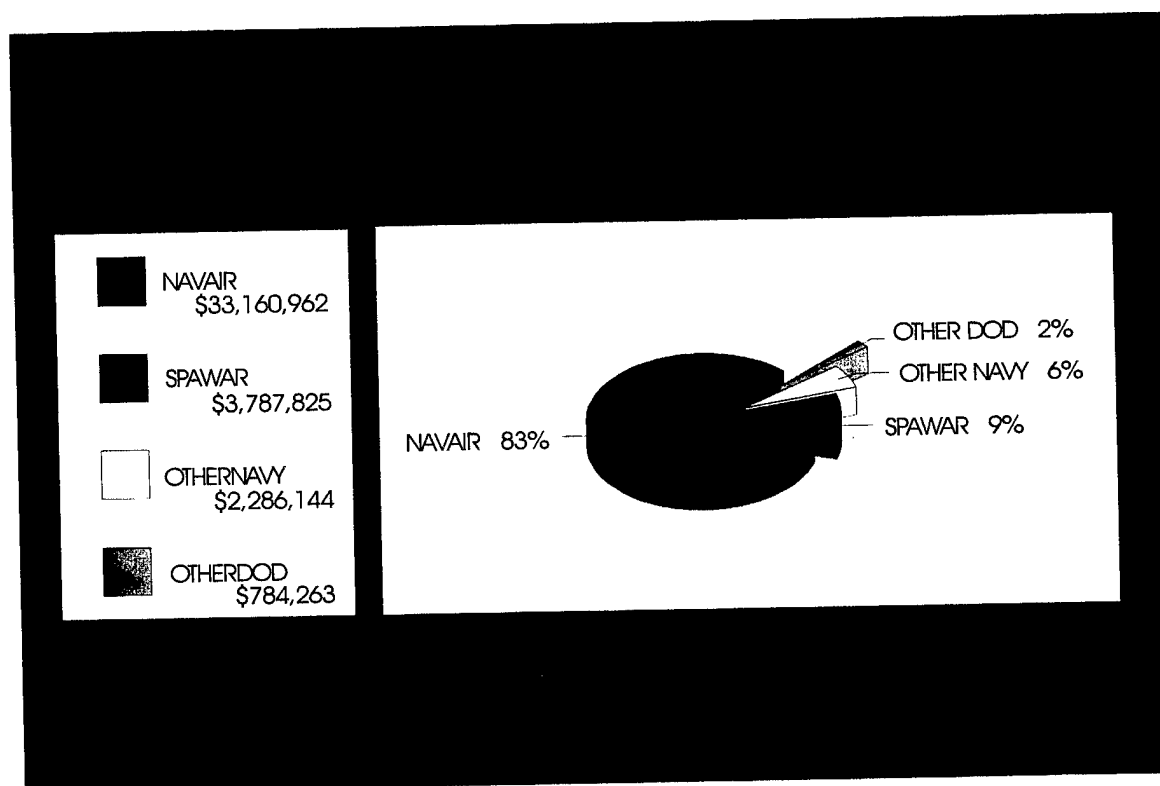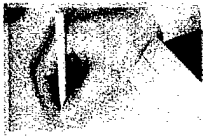
Contracting

Utilizing the services of the Fleet and Industrial Supply Center Norfolk, Detachment, Philadelphia, NRaD DIV DET had a very successful year in establishing contracts. A total of 104 actions exceeding $25,000 was issued for an overall total of $13,590,233. Of this total, 63% or 65 actions representing $8,582,912 were awarded under competitive conditions.

NRaD DIV DET's Contracting Officer Representatives (CORs) participate in a variety of contracts management, ranging from technical services through administrative support. Therefore, we have continued to ensure the widest range of responsible personnel receive COR training, attend annual seminars, and provide the requisite technical expertise necessary to perform the COR function. Our CORs hold positions of responsibility including complex technical positions, that require knowledge in engineering services or research and development, assisting them in the performance of all COR duties.

Our CORs and the types of contracts they serve are:

+ Tony Brancato   -   Computer Services
+ Mike Denham   -   Engineering Services
+ Don Donaghy   -   Management Support
+ Judy Jolly   -   Facility and Management Support

Technical

Accomplishments
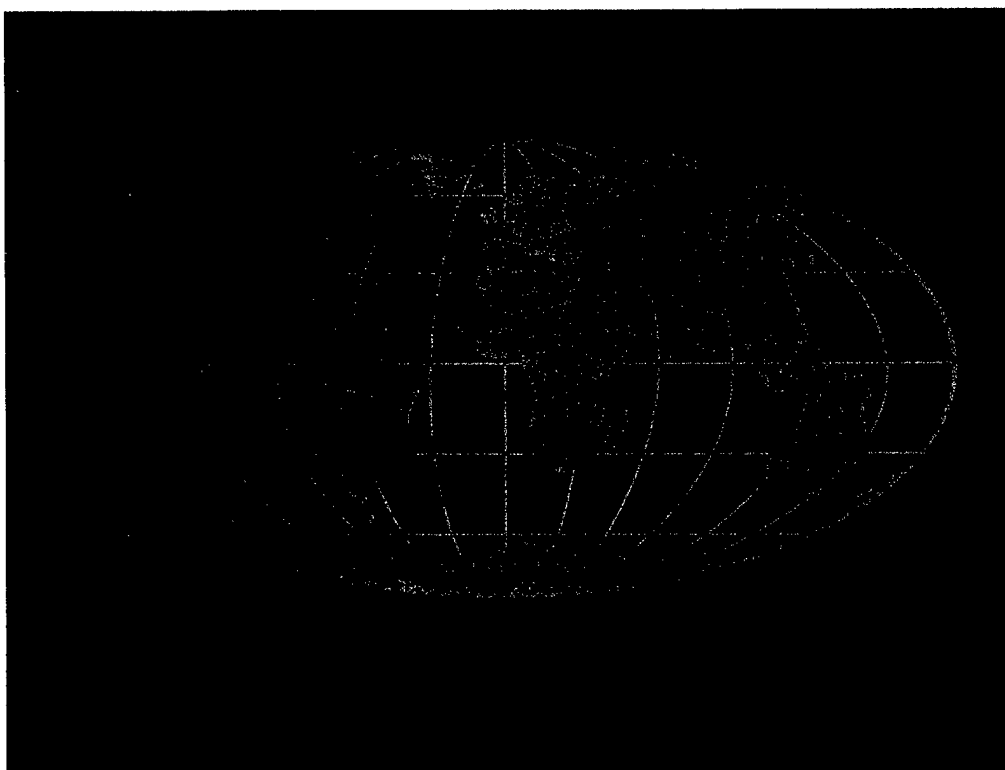
Engineering & Technical Support to PMA-281
For
Afloat Planning System (APS)

Role:

✦ **Technical Services**

✦ **Installation Planning**

✦ **Testing Support**

✦ **Integrated Logistics Support**

The Afloat Planning System is comprised of the computer system and applications software items which provide for the planning, distribution and employment support of the Tomahawk Land Attack Missile (TLAM). APS will provide each Battle Force (BF)/Battle Group (BG) Commander with the same functional capability as the shore-based Cruise Missile Support Activity (CMSA) for planning conventional TLAM missions. The APS can facilitate a reduction in the dependence on non-organic assets or long-haul communications for management information system data during crisis surge and/or hostile activity.

The APS effort for 1996 included coordinating and participating in the installation of hardware and software and testing of the APS on the following platforms:

✦ *USS Carl Vinson* (CVN 70)

✦ *USS Constellation* (CV 64)

✦ *USS Theodore Roosevelt* (CVN 71)

✦ Rapid Deployment Suite (RDS) No. 2.

Mr. Steve Hoshowsky   *Mr. Bill Nork*   *Mr. Jim Steib*

All the TAC-3 hardware installed in the above platforms was architected, procured, assembled, and integration tested by NRaD DIV DET.

NRaD DIV DET installed two tabletop TAC-3 workstations and two ruggedized shipboard rack TAC-3 workstations at the Naval Marine Intelligence Training Center (NMITC), Dam Neck, VA, for use in the Tomahawk Planning System - Afloat (TPSA) Mission Planners Course.

NRaD DIV DET coordinated the development of the Ships Installation Drawing (SID) packages by the Expanded Planning Yards including conducting ship checks for the installation of APS on the following ships: *USS Abraham Lincoln* (CVN 72), *USS John C. Stennis* (CVN 74), and *USS Dwight D. Eisenhower* (CVN 69).

NRaD DIV DET participated in the following APS development efforts:

✦ Digital Imagery Workstation Suite Afloat Configuration Consolidation

✦ Tomahawk Planning system Afloat (TPSA) Rehost to TAC-4 hardware

✦ Mission Distribution System Rehost to TAC-4 hardware.

NRaD DIV DET Point-of-Contact: Mr. Steve Hoshowsky, Code D4203SH, Tel: (215) 214-8040; DSN: 442-8040; FAX: (215) 214-8110, Naval Command, Control and Ocean Surveillance Center RDT&E Division, Detachment, Philadelphia, Pennsylvania.

RAPID DEPLOYMENT SUITE
(RDS 1996)

Role:

♦ **Coordination of RDS Plant Engineering and Integration**

♦ **Installation Planning, Site Implementation, Suite Light-Off and Checkout**

♦ **Physical and Automated Information System (AIS) Accreditation Coordination and Security Guidance / Assistance**

♦ **On-Site Support and Upgrade Implementation**

♦ **Configuration and Uniformity Management**

♦ **Integrated Logistics Support**

The Rapid Deployment Suite (RDS) is comprised of Afloat Planning System (APS) and Joint Service Imagery Processing System-Navy (JSIPS-N) equipment housed in three or four standard mobile tactical shelters. The RDS is deployed as one complete self contained unit bringing the TOMAHAWK Land Attack Missile (TLAM) Tactical Mission Planning System (TMPS) capability to any Battle Force / Battle Group (BF/BG) Commander and their theater of operation. All external communications, connectivity, and data transmission security safeguards are provided by host activities / site(s).

The RDS was developed to accommodate deployment in two operating arenas, both as a fully accredited self standing Sensitive Compartmented Information Facility (SCIF) and as a remotely located Tactical SCIF. Construction of the RDS incorporates physical as well as some Transient Electromagnetic Pulse Emanation Standard (TEMPEST) and Electromagnetic Interference (EMI) hardening to meet applicable requirements of Director of Central Intelligence Directive (DCID) 1/21.

Mr. Steve Kubicki

Mr. Ted Morrison

Mr. Dean Kralle

Raw data is introduced to the RDS primarily via magnetic media, photography and/or hard copy, but may include an external communications link for National Imagery input. When the RDS is deployed to the Naval Strike Warfare Center, Fallon (NSWC, Fallon), an APS Operations Support Detachment (AOSD) or a Joint Mobile Operational Command Center (JMOCC), fiber optic interface(s) may be installed connecting the RDS to the host facility. No communication transmitters, receivers or encryption devices other than Secure Telephone Units - Third generation (STU-IIIs) are incorporated in the present design.

In 1996, NRaD DIV DET Philadelphia representatives supported RDS #1 installed at the AOSD Pacific, Commander-in-Chief, U.S. Pacific Fleet (CINCPACFLT), Pearl Harbor, HI by partaking in the improvement and repair of several environmental features. This action included the complete replacement of the Intrusion Detection System (IDS), repair of failed Environmental Control Units (ECUs), upgrading the primary power circuits and various design alterations to improve habitability and integrity to the outside environment.

Several site visits were also conducted to provide assistance and guidance in direct support of new RDS installations. Sites visited for installation support were AOSD Atlantic (RDS #2) at Commander-in-Chief, U.S. Atlantic Fleet (CINCLANTFLT), Norfolk, VA and the Naval Strike Warfare Center (NSWC) (RDS #3) at Naval Air Station (NAS), Fallon, NV. Issues addressed ranged from site hotel service requirements, shelter arrangement with regard to pad layout and security issues.

Part of NRaD DIV DET's RDS tasking is the coordination of multiple site visits to provide a direct conveyance between the programmatic managers and RDS users of changing operational requirements, practices, thoughts and ideas. The intent of this requirement is for NRaD DET to represent the Program Executive Office Cruise Missiles Project RDS Program Manager while visiting each RDS site three or four times a year. The representative will require technical expertise capable of addressing all issues encountered and may be accompanied by a small support team comprised of personnel from various activities. To date NRaD DIV DET has coordinated two of these liaisons with AOSD PAC and one with AOSD LANT. All exchanges have been well received by the activities visited and have proved to be informative to all participants.

Future activities include the continuation of site liaison, construction of two new RDS facilities, addition of imagery functionality to RDS #1 & #2, improvement to RDS #1 ECUs, continued efforts to bring all RDSs closer to a generic configuration and incorporation of additional habitability modifications.

NRaD DIV DET Point-of-Contact: Mr. Stephen Kubicki Jr. (RDS Team Leader) Code D4203SK; Tel: (215) 214-8037 or DSN 442-8037, and APS TYPE DESK, Tel (215) 214-8081; Naval Command, Control and Ocean Surveillance Center, RDT&E Division Detachment, Philadelphia, Pennsylvania.

Engineering & Technical Support to PMA-281
For
Joint Service Imagery Processing System - Navy (JSIPS-N)

Role:

✦ **Technical Services**

✦ **Installation Planning**

✦ **Testing Support**

✦ **Integrated Logistics Support**

The Joint Service Imagery Processing System - Navy (JSIPS-N) is a shipboard deployable, tactical digital imagery system with the capability to receive, process, store, exploit, and disseminate imagery from a variety of sources. JSIPS-N will provide the Battle Group/ Battle Force (BG/BF) Commander with enhanced intelligence support via digital processing and linkage of imagery with imagery support data. The JSIPS-N design is predicated upon functional allocations to, and interfaces among, existing Navy systems that are presently being designed to perform functions other than JSIPS-N. In so doing, the Navy's approach to JSIPS-N maximizes the existing (or planned) organic shipboard information management systems by adding new functions to those systems.

The JSIPS-N effort for 1996 included coordinating and participating in the installation of hardware and software and testing of the JSIPS-N on board the following platforms:

✦ *USS Carl Vinson* (CVN-70)

✦ *USS Constellation* (CV 64)

✦ *USS Theodore Roosevelt* (CVN 71).

Mr. Mark Cunningham

Mr. Edward Zantek

Mr. Mike Denham

NRaD DIV DET also coordinated and participated in the emergent installation of hardware and software and testing for a "partial" interim installation of JSIPS-N on the USS Enterprise (CVN 65) to support a 1996 deployment obligation.

The TAC-3 hardware used for the Precision Targeting Workstation (PTW) was architected, procured, assembled, and integration tested for the above JSIPS-N installs by NRaD DIV DET.

NRaD DIV DET began coordinating the installation of JSIPS-N hardware and software at the Navy Marine Intelligence Training Center (NMITC), Dam Neck, VA, to support all new classrooms and JSIPS-N curriculum.

NRaD DIV DET also participated in the following systems development efforts:

◆ National Input Segment - Dissemination element (NIS (DE))

◆ Precision Targeting Workstation Rehost to TAC-4 hardware

◆ Strike Planning Archive (SPA) hosted on a TAC-4 hardware suite.

NRaD DIV DET continued to participate in meetings with NAVAIR and NAVSEA to update installation plans and the system hardware configuration for JSIPS-N on LHA/LHD Class ships. The Detachment updated proposed JSIPS-N equipment arrangement drawings for LHA and LHD Class ships and began coordinating the installation of hardware on the following ships: *USS Kearsage* (LHD 3), *USS Tarawa* (LHA 1), *USS Saipan* (LHA 2).

NRaD DIV DET Point-of-Contact: Mr. Stephen Hoshowsky, Code D4203SH, Tel: (215) 214-8040; DSN: 442-8040; FAX: (215) 214-8110; Naval Command, Control and Ocean Surveillance Center RDT&E Division, Detachment, Philadelphia, Pennsylvania.

Logistics Planning Support
to PMA-281

Logistics planning in FY96 continued for the Tomahawk Mission Planning Center (TMPC), Afloat Planning System (APS), and the Joint Imagery Processing System - Navy (JSIPS-N). These systems were in various stages of development, installation or upgrade. In addition, detailed plans were developed in support of the facilities, installation, security, training, and management of a TMPC for the United Kingdom.

NRaD DIV DET personnel were busy planning and executing changes to the logistics support structure to keep pace with the shrinking support budget faced by the Cruise Missile Project Office. The foremost change was initiated in the supply support arena where traditional supply support, through the Navy Inventory Control Point (NAVICP) was becoming difficult and costly. A supply support initiative was undertaken with the following goals: to reduce costs, decrease inventory, maintain readiness, and the configuration control management of commercial off-the-shelf (COTS) items. This was accomplished by identifying a pack-up kit (PUK) that comprised single point failure items and items that had demonstrated reliability. These kits were provided to both the ashore and afloat operating sites. The remaining spare assets were identified and stocked at a government owned contractor operated facility in Memphis, TN.

NRaD DIV DET adopted a commercial transport system (FedEx) that had a proven track record for on-time services, inventory control and excellent tracking capabilities. Configuration management was achieved by identifying the most volatile and complex piece of equipment used in the Tomahawk Mission Planning System (Digital Imagery Workstation) and linking the NRaD DIV DET configuration management system with the prime contractor (GDE Systems, Inc.) configuration system. An Interactive Computer Aided provisioning system was used that could automatically update the weapon system file at NAVICP Mechanicsburg to reflect the configuration of the particular site. This
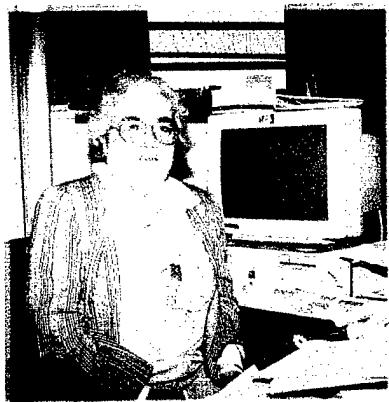
Ms. Judy Jolly   *Ms. Eileen Nikander*   *Mr. Joe DiPardo*

enabled an allowance list to be generated that reflected the exact configuration of the site. Internet was the primary means of communications between sites, NRaD DIV DET, FedEx, and PMA-281. This process established the cornerstone for which NRaD DIV DET has plans to exploit the world wide web for further endeavors to aid in this process for FY97.

NRaD DIV DET personnel were active with the Defense Dissemination Project Office (DDPO) in developing logistics strategies for the DE (Dissemination Element) portion of the JSIPS-N. NRaD DIV DET personnel attended In Process Reviews with the DDPO and PMA-281 Logistics Manager to discuss Depot support, training, computer based training, on-line documentation, Help Desk, and configuration management. The forerunner to the DE, the Relieve Element (RE) still needed to be supported until the DE is fielded in FY97. Support strategies and alternatives were developed and provided to PMA-281 for consideration.

NRaD DIV DET personnel participated in the JSIPS-N training conference and will be the principal involved in compiling all of the segment training material, formatting and providing the total JSIPS-N training courses to PMA-281. After review and approval, they will be provided to NMITC for implementation. NRaD DIV DET continued to pull all of these materials together from GDE Systems, Lockheed Martin (Valley Forge), and GTE, with a target date for a pilot in mid FY97.

NRaD DIV DET personnel continued to provide acquisition support to the program office. Personnel prepared competitive and noncompetitive procurement documents for the upgrades to the APS/JSIPS Systems. NRaD DIV DET personnel have also made major procurements for a GENRAD tester that will be used at GDE Systems for test program set development for complex and expensive PC boards that are part of the DIWS. NRaD DIV DET personnel developed and prepared all supporting documentation and as required by Federal Acquisition Regulation (FAR) to justify the less than full and open competition which is normally required. NRaD DIV DET personnel also prepared procurement request for software, software technical support, and site licenses for software installed at Cruise Missile development and operational sites.

NRaD DIV DET Point-of-Contact: Mr. Dennis Rozanski, Code D4203DR; Tel: (215) 214-8020; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

Mission Distribution System
(MDS 1996)

Role:

◆ **Hardware Engineering and Integration**

◆ **Installation Planning, Distribution and On-Site Implement-ation including training for both hardware and software**

◆ **System Support from version 2.2 through the present 3.0.8.2 and beyond**

◆ **Integrated Logistics Support**

◆ **24 Hour by 7 Day Trouble Desk Support**

◆ **On-Line Performance Support Tools (OPLST) Development and Support**

The Mission Distribution System (MDS) is designed to aid the Battle Force / Battle Group (BF/BG) Strike Warfare decision makers by satisfying the tactical requirement of displaying the TOMAHAWK Land Attack Missile (TLAM) inventory of approved PrePlanned Missions (PPMs) and Fleet missile inventory levels. MDS can receive and automatically update its Master Mission Library (MML) data base while providing search, sort and display capabilities of the TLAM Mission Folder Data for task force strike analysis and re-transmission of a Mission Data Update(s) (MDU) to subordinate echelons. In its enhanced roll MDS can allow planners to redefine mission data packages before transmission on to other MDS sites or to sites with Advanced TOMAHAWK Weapons Control System (ATWCS) launch capabilities.

An integral part of the MDS operational concept is the On-Line Performance Support Tools (OPLST) package which provides computer based training, On-Line Job Planner, On-Line Help and On-Line support documentation including the System Operators Manual (SOM) and TOMAHAWK Engagement Planning Package (TEPP) Volume I.

In 1996, NRaD DIV DET Philadelphia representatives supported MDS versions 3.0.7.2 and fielded version 3.0.8.2. NRaD DIV DET responsibilities included support of developmental testing, site surveys, hardware and software installations, and development of both informal site and formal training packages. On-site informal training was provided to most MDS sites (ashore and afloat) during the past year while formal classroom courses were taught at the Naval and Marine Corps Intelligence Training Center (NMITC), Dam Neck, VA;

Mr. Stephen Kubicki

Tactical Training Group, Atlantic (TACTRAGRU LANT), Dam Neck, VA; and Tactical Training Group Pacific (TACTRAGRU PAC), San Diego, CA.

OLPST development, as well as updating the existing package, was a continuous endeavor. Additional features, such as electronically hosting the TEPP Volume I (Mission ID Cross References and Index), were undertaken as their requirements surfaced. Advances in simplifying the load procedures of the OLPST were effected by storing and distributing the entire package on a CD-ROM, eliminating the multiple tape load previously employed.

NRaD DIV DET personnel integrated, shipped, and installed MDS configured TAC-3's and HP-712s to various sites in support of communications net testing, MDS version 3.X and 4.X system development, and scheduled fleet installations. NRaD DIV DET personnel integrated, modified, installed and/or made operationally compatible various peripheral hardware(s) including: Generic Front-End Communications Processors (GFCP), upgrade scanners, LaserJet III and IV printers of various configurations, Secure Data Transfer (SDX) systems, Secure Telephone Units (STU-III) and various communications nets.

MDS Software installation / site activation and support included minimal operational training for MDS versions 3.0.7.2 and 3.0.8.2. Software distribution was comprised of reproduction and packaging all software media and supporting documentation, the generation of installation instructions packaging, and shipping. The distribution of version 3.0.8.2 required tailored shipping in which selected sites (16 world wide) were shipped, installed and trained within a three week window. Because a majority of these sites were actively engaged in real-time operational environments the seamless MDS hardware upgrade and software integration was quite an achievement in itself.

Development of the MDS version of 3.0.8.2 upgrade included a hardware upgrade (replacement of the existing disk drives with larger removable types, replacement of the single speed CD-ROM with a six speed unit, and supporting mechanical upgrades) and software (delivered on a single CD-ROM with menu driven configuration selection). The hardware upgrade relieved an existing a memory bound condition and extends the serviceability of the existing hardware indefinitely. The software upgrade corrected many known anomalies and permits continued data base compatibility.

To date there are approximately 50 supported MDS site installations. On-site and telephonic support services were provided to virtually all MDS sites. Response time to emergency on-site support requests is nominally 24 to 48 hours regardless of where in the world, with representatives prepared to remain on-site until the problem is resolved. During 1996, NRaD DIV DET representatives have visited all out of Continental United States (CONUS) sites at least once. All in CONUS sites were also visited during 1996 at least once. NRaD DIV DET supplements on-site support with 24 hour telephone support.

NRaD DIV DET Point-of-Contact: Mr. Stephen Kubicki Jr. (MDS Team Leader) Code D4203SK; Tel: (215) 214-8037; DSN: 442-8037; MDS TYPE DESK Tel: (215) 214-8086, Naval Command, Control and Ocean Surveillance Center, RDT&E Division Detachment, Philadelphia, Pennsylvania.

Electronic Tomahawk Employment Planning Package (ETEPP)

Role:

✦ **Hardware Depot**

✦ **Help Desk**

✦ **Technical Support**

✦ **Logistics Planning**

The Electronic Tomahawk Employment Planning Package (ETEPP) provides data base functions and other electronic tools to store, retrieve, and manipulate critical command and control information. Each Tomahawk mission carries certain essential defining criteria about its performance characteristics. ETEPP allows strike planners to assemble the key information and to adjust other external fire control factors to maximize the efforts of the battle group with respect to Tomahawk strike planning.

NRaD DIV DET Philadelphia, along with Naval Surface Warfare Center Dahlgren Division (NSWCDD), are designated respectively as the hardware and software support facilities for ETEPP. PMA-281 has tasked NRaD DIV DET to provide physical and technical facilities to receive, integrate, test, distribute, and maintain the ETEPP computer systems.

NRaD DIV DET provides help desk, replacement hardware support, and acts to resolve any problems the user may experience. Over the years since 1993, the ETEPP distribution list has grown to 231 systems. NRaD DIV DET provided resolution to 115 requests for technical assistance in FY-96. These fleet issues are routinely worked with the coordinating assistance of the type commanders: COMSUBLANT, COMSUBPAC, COMNAVSURFLANT, COMNAVSURFPAC, CINCLANTFLT, and CINCPACFLT.

NRaD DIV DET is currently working with PMA-281, Cruise Missile Support Activities LANT and PAC to affect a major hardware upgrade. Each ETEPP computer is scheduled to receive two replacement hard drives designed to enlarge the data storage capacity of the system.

NRaD DIV DET Point-of-Contact: Mr. Jim Barnes, Code D4203JB; Tel: (215) 214-8021; DSN: 442-8021; Naval Command, Control and Ocean Surveillance Center, RDT&E Division Detachment, Philadelphia, Pennsylvania.

Mr. Jim Barnes

CVN 76 CVIC CONFIGURATION DESIGN
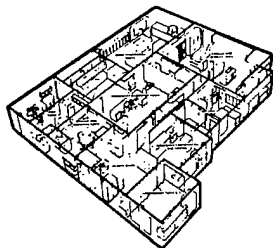
Role:

♦ **Compilation and Analysis of System Data**

♦ **Space Utilization and Design**

♦ **Installation Planning Support**

NRaD DIV DET was tasked to develop and maintain the CVIC Reconfiguration Plan for CVN 76 new construction and to provide planning support for the CVN-68 and CVN-75.

NRaD DIV DET has compiled parametric data lists for existing and future mission planning systems, information processing systems, and image processing systems that are located in CVIC. These lists, which contain shipboard service requirements (power, air conditioning, etc.), are used to develop plans for the near term transition of existing systems to new equipment, as well as for future systems installations.

In FY96, NRaD DIV DET continued to provide planning support to PMA-281 and the Design Center for the *USS Nimitz* (CVN 69), the *USS Harry S. Truman* (CVN 75), and the *USS Ronald Reagan* (CVN 76). With all the new systems coming on board, Detachment personnel have been working in conjunction with COMNAVAIRLANT and the planning center to develop a more functional Carrier Intelligence Center (CVIC). NRaD DIV DET provided support at installation review meetings for CVIC Reconfiguration. We continued to support the Reconfiguration Execution Plan for the CVN 68 and CVN 76.

NRaD DIV DET Point-of-Contact: Mr. Allan M. Gaidis, Code D4203AG; Tel: (215) 214-8033; DSN: 442-8033; FAX: (215) 214-8110; email: gaidis@philly.nosc.mil; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

Mr. Wayne Lombardo

Mr. Allan Gaidis

CARRIER INTELLIGENCE CENTER (CVIC) RECONFIGURATION
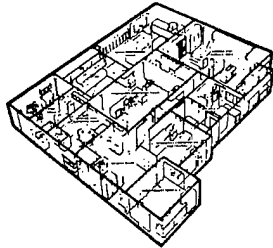
Role:

✦ **Compilation and Analysis of System Data**

✦ **Space Utilization and Design**

✦ **Installation Planning Support**

NRaD DIV DET was tasked to provide engineering and technical support in the development of the reconfiguration of the existing CVICs to support the numerous ongoing and developing C4I systems and establish a requirement for a Master Plan to coordinate these installations through the year 2010. Tasking is from the Naval Air Systems Command, Program Executive Officer, Cruise Missile Project and Unmanned Aerial Vehicles Joint Project (PEOCU).

NRaD DIV DET produces and updates installation guides for all the systems under its cognizance. These installation guides contain the system installation control drawings (ICD's) and parametric data required to prepare ship installation control drawings (SID's) required to install equipment on a ship. The information from these installation guides and data collected from other systems sharing space in CVIC is used to plan for the orderly addition of new equipment and the updating of existing systems.

During FY96, NRaD DIV DET continued supporting this effort by providing technical assistance, participating in Design Reviews and other technical meetings, producing and updating equipment arrangement drawings , and serving as liaison with several Program Offices in all of the Systems Commands. CVIC reconfiguration guidance plans have been produced to date for the *USS Constellation* (CV 64), *USS Carl Vinson* (CVN 70), *USS Theodore Roosevelt* (CVN 71), *USS Abraham Lincoln* (CVN 72), *USS George Washington* (CVN 73) and the *USS John C. Stennis* (CVN 74). We are currently producing the CVIC reconfiguration guidance plans for the *USS Dwight D. Eisenhower* (CVN 69).

NRaD DIV DET Point-of-Contact: Mr. Allan M. Gaidis, Code D4203AG; Tel: (215) 214-8033; DSN: 442-8033; FAX: (215) 214-8110; email: gaidis@philly.nosc.mil; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

Mr. Wayne Lombardo   *Mr. Allan Gaidis*

TACTICAL AUTOMATED MISSION PLANNING SYSTEM (TAMPS)
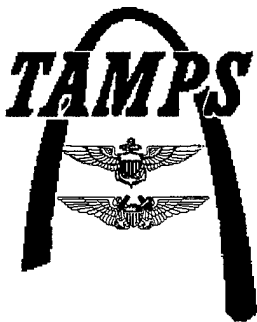
Role:

+ **Hardware Engineering and Systems Installation Support**

+ **Installation Planning**

+ **Technical Support**

+ **Logistics Management**

+ **Procurement Support**

TAMPS is an interactive graphic system supporting aircrew mission planning for U.S. Navy and Marine Corps airborne weapon systems. TAMPS was first deployed in 1987 at the direction of the Secretary of the Navy. The system is currently installed aboard aircraft carriers, at shore bases, intelligence centers, weapons schools and aviation support facilities throughout the world.

In FY 1996, NRaD DIV DET continued to support TAMPS providing engineering, installation, technical assistance, On-the-Job Training (OJT), on-call Fleet support, logistics management, and procurement support for all hardware and software versions of TAMPS.

A very significant effort of the TAMPS team at NRaD DIV DET during FY 96 has been the deployment and support of the ACE Portable based TAMPS system. ACE Portable systems, TAC-3 computer based systems, and upgrades to the existing DTC-2 based TAMPS systems were installed by NRaD DIV DET representatives with the TAMPS Version 6 software which received Commander, Operational Test and Evaluation Force (COMOPTEVFOR) approval in August 1995.

Mr. Steve Fox   *Ms. Karen Levine*

In addition to providing design support for the V4 ACE Portables and for the retrofits of the V3 ACE Portables, NRaD DIV DET procured printers and carrying cases for the portable systems and peripherals. NRaD DIV DET performed system integration and "burn-in" following receipt of the various components from the manufacturers. NRaD DIV DET also installed the upgrade kits for the DTC-2 systems and completed installations of the TAC-3 systems.

New maintenance and user documentation was developed by NRaD DIV DET to describe the ACE Portable and TAC-3 systems and the modifications to the DTC-2 systems and to provide information on the use of the TAMPS Version 6 software. New training materials and courses were developed by NRaD DIV DET and presented to instructors at Navy training facilities. Instructor training was also provided for the Navy training facilities.

With the addition of ACE Portables and TAC-3 systems to the fleet, over 315 TAMPS systems are supported by the NRaD DIV DET Fleet support team. To enhance this effort, a new TAMPS toll-free hotline has been established for the Fleet, 1-888-TAMPS4U.

NRaD DIV DET Philadelphia representatives continued to provide telephone support and visits to a multitude of sites world wide, both ashore and afloat, to provide technical and repair assistance, training, software and hardware installation, and crossdeck of systems between ships. NRaD DIV DET also continued to provide the full range of logistics management functions including configuration management and failure reports, maintenance concept development for new equipment, spares selection and procurement, inventory control management, and depot repair functions, as well as managing the COTS software licenses and maintenance.

NRaD DIV DET Point-of-Contact: Mr. S. P. Fox, Code D4203SF; Tel: (215) 214-8060/ DSN: 442-8060; FAX (215) 214-8110; **Ms. K. S. Levine**, Tel: (215) 214-8061; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

Mr. Paul Meisinger

Mr. Paul Steinbacher

DIGITAL PHOTO LAB AN/UYQ-78(V)
(DPL)

Role:
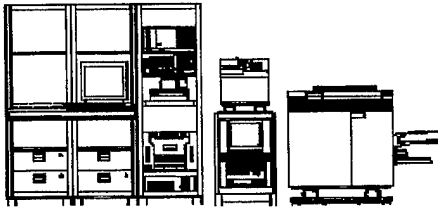
♦ System design and integration

♦ Hardware and software engineering

♦ Procurement support

♦ Prepare documentation

♦ Conduct training

♦ Life cycle support

♦ Configuration management

The Digital Photo Lab (DPL) AN/UYQ-78(V) program provides a computerized digital photo suite of equipment under the COTS NDI concept to allow a full range of digital photographic processes and interchange of digital photographic files with other shipboard and combat camera systems. This program offers the benefit of modern state-of-the-art computer technology to improve the way the U.S. Navy conducts business in the photo arena by enhancing Visual Information (VI), Public Affairs Office (PAO), Surface Surveillance Contact (SSC), and other photographic techniques. Additional benefits of this program are reduced photo processing chemical overboard discharge to assist in meeting Environmental Protection Agency regulations and allowing photo production to be continued while in non-discharge zones, pierside, or at remote locations that have limited fresh water. The DPL program is divided into distinct phases to allow a multi-level approach to the conversion of existing wet chemical photo labs with the flexibility to provide different configurations of the DPL for various classes of U.S. Naval vessels.

Mr. Tony Brancato   *Ms. Rhea Feldman*   *Mr. Tim Urbanski*
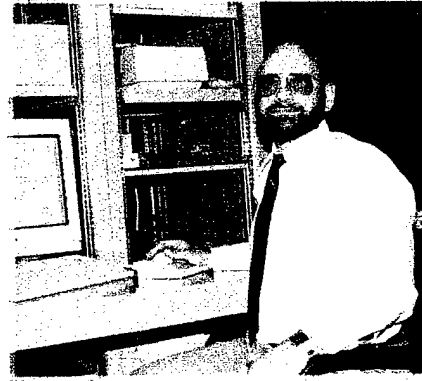
In mid 1994, NRaD DIV DET personnel designed the Digital Photo Lab AN/UYQ-78(V)1 (DPL Phase 1) system to be shipboard mounted with full observance of human engineering factors, mechanical shock/vibration, electrical safety, and equipment protection while allowing full functionality and versatility. The DPL Phase 1 system consists of a MacIntosh Quadra 950 Computer System, Powerbook 180 Computer System, Kodak XL-7700 Printer, Color Laser Copier/Printer, Flatbed Scanner, 5" Color Film Scanner, Optical Disk Drive, Exabyte Tape Drive, three DCS-200 Digital Camera Systems, and other supporting peripherals.

During 1995, NRaD DIV DET formalized the DPL as the production version, AN/UYQ-78(V), authorized for installation under SHIPALT 8424K (CV) and 8425K (CVN). DPL Phase 1 systems were installed onboard all active CV/CVN class aircraft carriers. Documentation was developed for DPL Phase 1 to include the Digital Photo Lab System Operator's Manual (SOM), installation guidance drawings, User Logistic Support Summary (ULSS), Computer Resources Life Cycle Management Plan (CRLCMP), and the System Operation and Verification Test (SOVT).

Collateral efforts as an extension to the DPL program included the design and fielding of the Hand Held Digital Camera Reconnaissance System (HHDCRS) for Fleet evaluation within the F-14 A/B/D Tactical Aircraft. Four HHDCRS Systems were installed and trained for this purpose. The engineering development model (EDM) of the DPL Phase 2 was designed with initial integration and testing just beginning.

In 1996, NRaD DIV DET continued life cycle support of the DPL Phase 1 systems installed in the Fleet. Twenty one requests for technical support, four Combat Systems Readiness Reviews (CSRR's), and six CASREPS were responded to by telephone, email, and on site visits. A DPL dial up bulletin board system (BBS) was established and was utilized frequently by ships having DPL to share information and stay current with software and documentation updates. Logistics support for DPL Phase 1 was completed to include the Digital Photo Lab System Technical Reference Handbook (DPL STRH), appendix allowance pages (AAP's), on board repair parts (OBRP) kits, and the introduction of formalized DPL maintenance training for DS technicians at NMITC.

DPL Phase 1 was installed onboard the *USS Boxer* LHD-4 as part of a NAVSEA PMS-377 initiative. Based on the success of the LHD-4 installation, NRaD DIV DET hosted a photo requirements meeting to identify the digital photographic requirements for LHA/LHD class ships. This meeting resulted in the design of a DPL Phase 1 system variant tailored to the LHA/LHD community. NAVSEA PMS-377 has tasked NRaD DIV DET to build and install the DPL Phase 1 variant onboard the USS Battan LHD-5 with tasking for the LHD-6 and LHD-7 to follow.

The Digital Photo Lab AN/UYQ-78(V)2 (DPL Phase 2) design was finalized and evaluation completed. DPL Phase 2 consists of all DPL Phase 1 equipment, plus, two Pentium based computers with CD and DAT Tape capability, a High Resolution Digital Camera, a very

High Resolution Digital Camera, a Night Vision lens, one additional Kodak XL-7720 Printer, a high speed 35mm Film Scanner, a Flatbed Color Scanner, and a Large Format 36" wide Color Digital Photo Printer. DPL Phase 2 systems were installed onboard the *USS John F Kennedy* CV-67 and the *USS Constellation* CV-64.

The HHDCRS systems fielded during 1995 were deinstalled and as a result of the evaluation the HHDCRS functions were incorporated into a fixed workstation under another related project.

NRaD DIV DET provides a full range of services including design, development, customizing hardware and software, system integration, installation, training, technical support, and life cycle management for the Digital Photo Lab system, digital hand-held cameras and digital photographic production techniques.

NRaD DIV DET Point of Contact: Mr. Tim Urbanski, Tel: Code D4203TU, (215) 214-8023; DSN: 442-8023; Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

DIGITAL CAMERA RECEIVING SYSTEM
(DCRS)

Role:

♦ **System design and integration**

♦ **Hardware and software engineering**

♦ **Procurement support**

♦ **Prepare documentation**

♦ **Conduct training**

♦ **Life cycle support**

♦ **Configuration management**
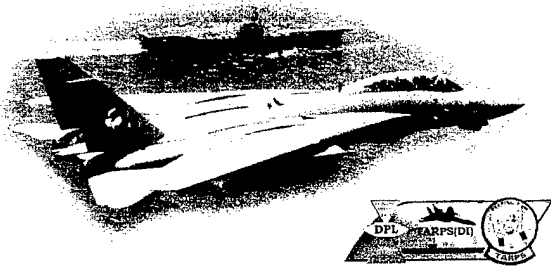
The Digital Camera Receiving System (DCRS) program provides a computerized digital photographic and imaging workstation under the COTS NDI concept to allow reception of the Tactical Aircraft Reconnaissance Pod System - Digital Imagery (TARPS-DI) onboard U.S. Naval aircraft carriers. This system is an expansion of the Hand Held Digital Camera Reconnaissance System (HHDCRS) fielded for fleet evaluation in 1995 with the incorporation of unique interfaces to existing shipboard communications equipment. Near real time digital downlink capability of imagery from the F-14 tactical aircraft is provided along with digital photographic manipulation, high resolution video digitizing, National Image Transmission Format (NITF) conversion, MicroSoft Office, Message Text Format (MTF) editor, and a local area network (LAN) interface to the Afloat Planning System (APS) GENSER Precision Targeting Workstation (PTW).

In 1996, the Program Executive Office for Tactical Aircraft (PEOTACAIR) PMA-241 tasked NRaD DIV DET and the Naval Air Warfare Center Aircraft Division, Indianapolis (NAWCAD Indy) to design and incorporate a near real time digital imagery capability in
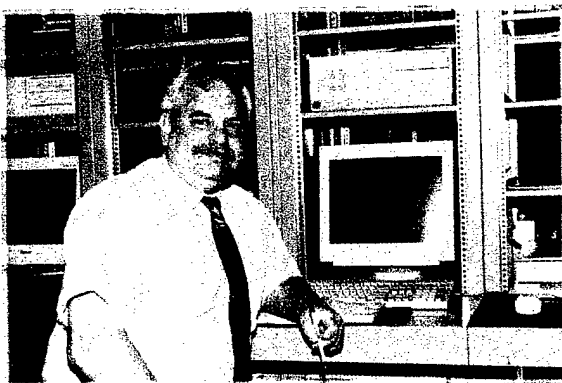
Mr. Vincent Di Cristofaro
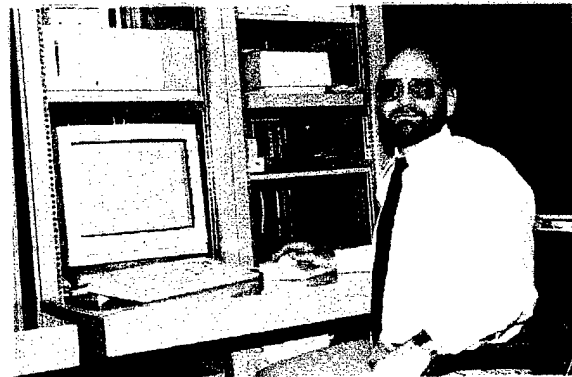
Mr. Tim Urbanski

the existing TARPS pods and associated aircraft. NRaD DIV DET provided system engineering support for the aircraft sensors and full engineering and integration of the shipboard receiving capability. NAWCAD Indy provided the engineering and integration efforts for the F-14 aircraft and TARPS pod.

NRaD DIV DET designed and built the Digital Camera Receiving System (DCRS) utilizing the common architecture and equipment of the DPL Phase 2 as a basis. Functions and modifications that resulted from the HHDCRS fleet evaluation during 1995 were incorporated. By utilizing the DPL architecture as a basis for the workstation, the logistics elements for development, time required for design, and overall costs were reduced. Preliminary documentation developed for the DCRS includes the System Operator's Manual (SOM), System Technical Reference Handbook (STRH), installation guidance drawings, User Logistic Support Summary (ULSS), appendix allowance pages (AAP's), Computer Resources Life Cycle Management Plan (CRLCMP), and the System Verification and Operation Test (SOVT).

Special integration and design efforts were performed to interface the DCRS into existing cryptographic and communications equipment onboard the aircraft carrier to enable the data communications to work effectively. NRaD DIV DET hosted several meetings with the Commander Naval Air Forces Atlantic (CNAL) and Commander Naval Air Forces Pacific (CNAP) intelligence staffs to assure interfacing and functionality elements were implemented into the DCRS workstation. NAWCAD Indy undertook the integration of the digital camera sensors into the TARPS pod and associated F-14 aircraft modifications.

In May, June, and August of 1996, the system was flown by VF-32 in numerous mission scenarios. After several successful demonstration flights, the F-14 aircraft and TARPS(DI) pod were sent to the Naval Air Station Patuxent River for catapult, trapping, electromagnetic, and electrostatic survivability testing to meet aircraft carrier suitability certification. The system passed with several modifications recommended for the production version.

NRaD DIV DET installed the prototype DCRS onboard the *USS Theodore Roosevelt* (CVN-71) in September 1996 and provided additional capabilities requested by the ship and CNAL. Connectivity via LAN was installed to the APS PTW for digital imagery dissemination within the aircraft carrier based intelligence center. NRaD DIV DET also briefed, planned, and scheduled the installation of DCRS systems onboard the *USS John F. Kennedy* CV-67 and *USS Constellation* CV-64 prior to deployment.

As 1996 started, the idea of TARPS(DI) and DCRS was just forming. At the end of 1996, TARPS(DI) is a reality with the aircraft and pods in VF-32 modified with the TARPS(DI) and the DCRS system installed onboard the *USS Theodore Roosevelt* CVN-71. The Chief of Naval Operations N88 has identified this program as "urgent/compelling" and formalized it as a modification to operational requirement TW-30. The DCRS/TARPS(DI) capability has been identified for installation onboard all US Naval aircraft carriers as quickly as possible.

NRaD DIV DET provides a full range of services including design, development, customizing hardware and software, system integration, installation, training, technical support, and life cycle management for the Digital Camera Receiving System and digital cameras/sensors.

NRaD DIV DET Point of Contact: Mr. Tim Urbanski, Code D4203TU, (215) 214-8023/ DSN 442-8023; Naval Command, Control, and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

PHOTOGRAPHIC IMAGE EDITING SYSTEM (PIES)

Role:

◆ **System Development and Integration**

◆ **Installation Planning and Technical Support**

◆ **Integrated Logistics Support**

The Photographic Image Editing System (PIES) concept emerged in late 1988 from a Fleet requirement to reduce the amount of hazardous photo-processing chemicals discharged and to improve the manner in which the U.S. Navy conducts its air reconnaissance operations by starting to provide a method of digitizing the imagery for dissemination to various systems within CVIC. COMNAVAIRSYSCOM (AIR-547) provided initial tasking to evaluate the feasibility of digital imaging, processing, and implementation of that technology in a shipboard deployable configuration. An extensive market survey of industry leaders established the commercial state-of-the-art in digital image manipulation. Rapid advancements in computing speed, software advances, and chip size were making image manipulation software and hardware cheaper, easier, and more capable.

The primary mission of PIES is to enable CVIC Photo to organically digitize hard copy Tactical Air Reconnaissance Pod System (TARPS) film at 1280 X 1024 pixels of resolution for local analysis and to transfer these images to other systems for secondary dissemination to ashore sites and other afloat platforms. PIES also has the ability to input images from an 11" X 17" color flatbed scanner and a color high resolution color film scanner. These input devices give the PIES sites the ability to input hard copy images (i.e., existing photos, film, negatives, transparencies, charts) as color digital image files. These files can then be manipulated, output, and stored for future reference.

The PIES design stresses open architecture. VITec, SunRaster, National Imagery Transfer Format (NITF), and Tagged Image File Format (TIFF) are formats that PIES can read and write. The PIES imagery interchange capability currently provides the preferred method of transferring black & white or color digital images between the Digital Photo Lab System (DPL AN/UYQ-78(V)1) and the NTCS-A System. PIES utilizes a variety of media to transfer image files, including PC-DOS floppy disks (5.25" and 3.5"), 150 megabyte tape cartridges, 5.0 gigabyte exabyte tape cartridges, high resolution RGB video, NTSC composite video, and Ethernet LAN. PIES has the capability to handle true 24-bit color and
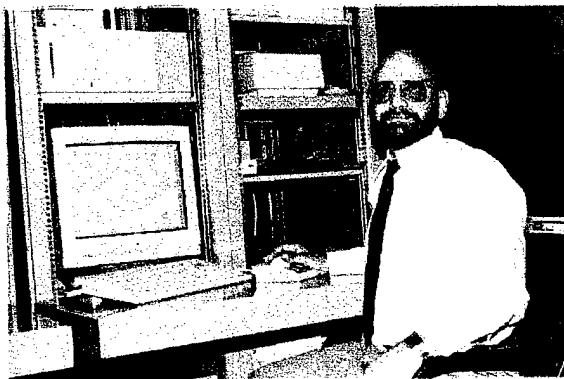
Mr. Tim Urbanski

greyscale images and print these images with clarity, resolution, and color reproduction that was previously associated with only photographic chemical processing.

As the PIES program matured within NAVAIR, the program management responsibility shifted from COMNAVAIRSYSCOM AIR-547 to PEOTACAIR PMA-253 and lastly to PEOTACAIR PMA-241. A Memorandum of Agreement (MOA) was signed which transferred the responsibility of the PIES systems and Program Management from PEOTACAIR PMA-241 to COMSPAWARSYSCOM PMW-162 effective October 1994. In support of this MOA, the PIES development team interfaced with the NTCS-A Imagery Architecture Working Group providing technology and support for the development of scanning and printing services. The scanner software, printer software and associated color calibration functions for the image printer were rewritten and ported over to HP-UNIX in support of the transition of the PIES functionality into the NTCS-A Architecture. High-resolution digitizing cameras, lenses, scanners, scan converters, and image printers were procured and installed in support of the MOA.

During 1995 the PIES systems onboard ships and at Fallon were maintained with NRaD DIV DET responding to nine fleet requests for technical assistance and four CASREPS. The PIES system was deinstalled from the USS Saratoga (CV-60) and reinstalled onboard the USS Independence (CV-62). PIES peripheral equipment was supplied to other Aircraft Carriers in support of the MOA and goal to implement the PIES functionality into the NTCS-A systems. NRaD DIV DET provided system grooming and refresher training prior to each ship's deployment.

During 1996 the remaining PIES Systems onboard ships were removed with the upgrade of NTCS-A systems to JMCIS. PIES System digitizing cameras, color flatbed scanners, and color image printers remained onboard these ships as support elements for the JMCIS architecture. The system at NAS Fallon remained as a stand alone PIES system. NRaD DIV DET responded to eleven fleet requests for technical assistance and four CASREPS. In continuing support of the MOA, NRaD DIV DET attended design meetings, interfaced with other DOD components, and maintained the PIES peripherals onboard Naval Ships.

As 1996 ended, the PIES system peripherals continue to be utilized for organically creating high resolution digital image files from TARPS film, Sighting Team and Surface Surveillance Contact (SSC) film & prints, Color Charts, Maps & Prints, various other film products from collateral sources as part of the JMCIS system.

NRaD DIV Det Point-of-Contact: Tim Urbanski, Code D4203TU, Tel: (215) 214-8023; DSN: 442-8023, FAX (215) 214-8110; Naval Comand, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

MODULAR IMAGE INTERPRETATION SYSTEM

Role:

◆ **Integrated Logistics Support**

◆ **Fleet Support**

◆ **Pre-Deployment Training**

The Modular Image Interpretation System (MIIS/AS-27B) provides mensuration capability for various imagery, e.g., TARPS, SAO, hand-held, etc., and chart formats. The computer system additionally allows use of standard "DOS" application software in a stand-alone Tempest environment for auxiliary operations.

NRaD DIV DET provides Fleet support, engineering and technical services, logistics, configuration management and control, and pre-deployment training for the MIIS/AS-27B in the intelligence centers onboard CV/CVN ships.

In 1994 the MIIS/AS-27B functionality was identified as one goal for replacement by digital imagery techniques hosted in the Naval Tactical Command System Afloat Image Exploitation Station (NIEWS). To this end, during 1995 several AS-27B MIIS units were identified for deactivation and removal from service.

Throughout 1995, two MIIS/AS-27B fleet units remained. One onboard the *USS America* (CV-66) and one onboard the *USS George Washington* (CVN-73). These units were maintained in operational status for TARPS and SAO support purposes. NRaD DIV DET provided support to these units for routine technical assistance and to satisfy two CASREPS.

During 1996, the two remaining MIIS/AS-27B fleet units and the development unit at NRaD DIV DET were deactivated. NRaD DIV DET provided disposal support for the hardware and destruction services for the software.

NRaD DIV DET Point-of-Contact: Tim Urbanski, Code D4203TU, Tel: (215) 214-8023; DSN: 442-8023; FAX: (215) 214-8110; Naval Comand, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

JOINT MARITIME COMMAND INFORMATION SYSTEM (JMCIS)
DATA BASE ENGINEERING PRODUCTION & SUPPORT

Role:

◆ **Software, Design, Development and Testing**

◆ **Data Base Production and Distribution**

◆ **Data Engineering**

The Navy Tactical Command System - Afloat (NTCS-A) is the afloat segment of the Joint Maritime Command Information System (JMCIS). NTCS-A is the primary Navy Command, Control, Communications, Computers, and Intelligence (C4I) system afloat. JMCIS integrates the functional capabilities of several C4I systems into a single system that supports C4I requirements for both the unit-level and flag-level commanders. NRaD DIV DET is responsible for the system engineering, development, integration, test and evaluation support for the integrated JMCIS data server, message handler and the NTCS-A Intelligence Processing Services (NIPS).

In FY96 NRaD DIV DET designed, developed, integrated and tested software to produce data bases to support NIPS 1.0, JMCIS 2.0, JMCIS 2.2, and Modernized Intelligence Database - Imagery - Global Command and Control System (MIG) installations. In addition, NRaD DIV DET satisfied many special data production requirements for the numerous JMCIS developers as well as supporting the various Fleet exercises in which NTCS-A/JMCIS and MIG were players. During the course of FY96, data base installations and updates were made at the Space and Naval Warfare Command, Navy and Marine Corps Intelligence Training Center, Defense Information Systems Agency, Naval Surface Warfare Center, Commander Naval Central Command and 23 Ships.

Mr. Rich Snow
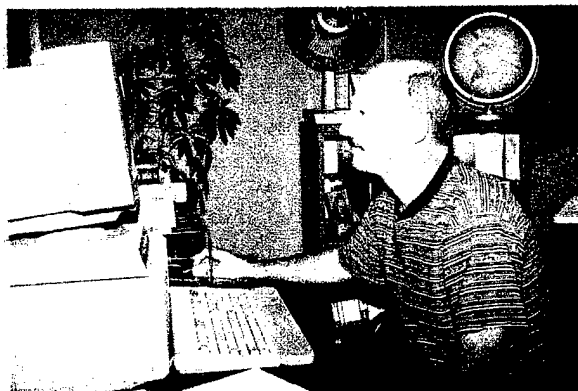
Mr. Louis Di Girolamo

NRaD DIV DET, in the role of data engineer for JMCIS, performed the following tasks:

- ◆ Defined/re-defined evolving JMCIS data requirements

- ◆ Coordinated data structure and fill changes

- ◆ Coordinated, developed and implemented data exchange interfaces

- ◆ Participated and coordinated with Navy/Joint standards effort, with significant effort/coordination with DIA on the evolving Modernized Integrated Database (MIDB)

- ◆ Participated in the MIDB Program Management Board

- ◆ Developed a single CDB server (CDBS) to support Ashore/Afloat applications

- ◆ Developed JMCIS generic data access guidelines

- ◆ Developed strategy to support the existing applications against single DBS

- ◆ Produced Blue Data to support JMCIS Applications

- ◆ Developed the Central Data Server Integration and Development Standards

- ◆ Developed and supported database production for USMC NIPS/JMCIS system

Technical management of this contract has been transferred to NRaD San Diego, Code D4222, as a result of a BRAC 95 decision.

NRaD Point of Contact: CDR Bill Sitz, Tel: (619) 553-2989; Naval Command, Control and Ocean Surveillance Center, San Diego, CA; **Mr. R. D. Snow**, Code D4221; Tel: (610) 260-4234; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

# JOINT MARITIME COMMAND INFORMATION SYSTEM (JMCIS) INSTALLATIONS & FLEET SUPPORT

Role:

✦ **Installation**

✦ **Training**

✦ **Technical Support**

The Naval Tactical Command System - Afloat (NTCS-A) is the afloat segment of the Joint Maritime Command Information System (JMCIS). NTCS-A is the primary Navy Command, Control, Communications, Computers, and Intelligence (C4I) system afloat. JMCIS integrates the functional capabilities of several C4I systems into a single system that supports C4I requirements for both the unit-level and flag-level commanders. NRaD DIV DET Philadelphia is responsible for the system engineering, development, integration, test and evaluation support for the integrated JMCIS Central Data Base Server (CDBS), Automated Message Handling Services (AMHS) and the NTCS-A Intelligence Processing Service (NIPS).

In FY96 NRaD DIV DET maintained over 40 NIPS 1.1.4, NTCS-A 2.0, JMCIS 2.1, JMCIS 2.2 and MIG operationally fielded systems. During the course of the year, system enhancements were incorporated and installed at numerous NTCS-A, JMCIS, and MIG sites. New and improved capabilities of JMCIS 2.2 architecture were installed aboard USS *George Washington*, where a successful operational evaluation was performed. During the course of the year numerous other JMCIS 2.2 installations were successfully completed and well received.

Mr. Rich Snow

Mr. Bob Flipse

FY96 JMCIS technical support highlights included: Engineering upgrades aboard *USS George Washington, USS Blue Ridge, USS Theodore Roosevelt, USS Enterprise, USS LaSalle,* and COMUSNAVCENT; operational support to the United States Marine Corps in the adaptation of JMCIS as their C4I system; operational support aboard *USS Blue Ridge* for exercise TEMPO BRAVE; operational support aboard *USS Blue Ridge,* I MEF, III MEF and MARFORPAC for exercise ULCHI FOCUS LENS (UFL); JWID-96 demonstration support at USCENTCOM, and the DISA GCCS JDEF.

NRaD Point of Contact: CDR Bill Sitz, Tel: (619) 553-2989; Naval Command, Control and Ocean Surveillance Center, San Diego, CA; **Mr. R. D. Snow,** Code D4221; Tel: (610) 260-4234; Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.

JOINT MARITIME COMMAND INFORMATION SYSTEM (JMCIS) CENTRAL DATA BASE SERVER, MESSAGE HANDLER AND NAVAL INTELLIGENCE SERVICES ANALYST APPLICATIONS SOFTWARE MAINTENANCE

Role:

✦ **Software Enhancements**

✦ **Testing**

✦ **Technical Support**

The Naval Tactical Command System - Afloat (NTCS-A) is the afloat segment of the Joint Maritime Command Information System (JMCIS). NTCS-A is the primary Navy Command, Control, Communications, Computers, and Intelligence (C4I) system afloat. JMCIS integrates the functional capabilities of several C4I systems into a single system that supports C4I requirements for both the unit-level and flag-level commanders. NRaD DIV DET is responsible for the system engineering, development, integration, test and evaluation support for the integrated JMCIS data server, message handler and the NTCS-A Intelligence Processing Service (NIPS).

In FY96 NRaD DIV DET maintained NIPS 1.1.4, the Central Data Base Server (CDBS), the Automated Message Handler Segment (AMHS) and various Intelligence applications for JMCIS/NIPS 2.0, JMCIS 2.1 and JMCIS 2.2. During FY96 NRaD DIV DET completed a 2.2 software maintenance build.

This included the following:

✦ Upgrade to SYBASE System 10

✦ Interface with CTAPS

✦ Scaleable Central Database Server

✦ Implementation of IDB key field changes (Be Number/Suffix)

✦ Increased storage of messages

✦ Implementation of Tactical Electronic Order of Battle (TEOB) data management

Mr. Rich Snow

✦ Implementation of JUNIT message parser

✦ Development of WEB technology to access IDB and NID databases

✦ Improved message handling software

✦ Improved Strikeplot software

✦ Improved database reports

✦ NID database changes

During FY96 Defense Information Systems Agency (DISA) adopted the CDBS, Strikeplot, and various Intelligence applications to be incorporated into GCCS. NRaD DIV DET, in support of this requirement, ported these segments and applications from the TAC-3/4 platform to a SUN platform , as well as from the HP operating system to the Solaris operating system. This system identified as Modernized Intelligence Database - Imagery - Global Command and Control System (MIG) participated in JWID96.

NRaD DIV DET developed the Central Data Server Track Association segment (CTA). This segment supports the association of tactically derived ELINT and Attribute data to Central Data Server entities. Automatic association with fixed site data will occur, if feasible. To aid in manual association, weighting/scoring of ambiguous candidates is provided to the analyst.

NRaD DIV DET redesigned the JMCIS Automated Message Handling System (AMHS), Profiler and Message Applications to support the Ashore and Afloat communities. This consisted of implementing a common data store to allow the AMHS to operate with either a SYBASE or Oracle DBMS, removing all message text and profile notifications/results from a database into a flat file and developing a single message output tool.

NRaD DIV DET implemented a software change to the JMCIS SYBASE segment which enabled the World Wide IDB to be loaded on the CDBS.

NRaD DIV DET implemented through the Strikeplot segment the capability to store and retrieve land track pictures. These land track pictures can be exchanged with other commands via network transfer and displayed on their JMCIS workstations.

NRaD Point-of-Contact: CDR Bill Sitz, Tel: (619) 553-2989; Naval Command, Control and Ocean Surveillance Center, San Diego, CA; **Mr. R. D. Snow**, Code D4221; Tel: (610) 260-4234; Naval Command, Control and Ocean Surveillance Center, RDT&E Division Detachment, Philadelphia, Pennsylvania.

NATIONAL MARITIME INTELLIGENCE DATABASE (NMID)

Role:

◆ Database development and Integration

◆ Software engineering

The Office of Naval Intelligence (ONI) is migrating select maritime Automated Information Systems (AIS), including their associated data bases and analytical toolsets, into a downsized client/server structure compliant with Department of Defense (DOD) Intelligence Information Systems (DODIIS) standards. Many of the data elements within legacy databases will be standardized and consolidated within an integrated database called the National Maritime Intelligence Database (NMID). The NMID will serve as the principal national information source for maritime intelligence and collateral data, including naval, merchant marine, and characteristics and performance information.

During 1996 NRaD DIV DET continued with development of the NMID Phase II. This phase consisted of integrating the On-line NID, Merchant Ships Characteristics (MSC), Maritime Emitter Identification Reference File (MEIRF) and the vessel portion of the Joint Maritime Information Element (JMIE). The Seawatch and JMIE track files were combined. Testing and Prototype application development continued in support of a planned installation at ONI in October 1996. The master schedule major milestones were further refined to identify all of the various data segments that are required for incorporation into the NMID.

The NRaD development plan consist of a three phase development effort extending roughly 28 months, through a series of overlapping phases. Subsequent phases will integrate the following databases into the NMID architecture:

Phase II

Seawatch
Amidships

Phase III

Joint Maritime Information Element
Merwatch Ports and Cargo

NRaD Point of Contact: Mr. Tom Lockhart, Code D421, Tel: (619) 553-2840; Naval Command, Control and Ocean Surveillance Center, 53140 Gatchell Road, Building 600, Room 222B, San Diego, CA 92152-7462.

Mr. Joel Cohen

ANALOG MERCHANT IMAGERY DATABASE of SHIPS (AMIDSHIPS)

Role:

✦ Systems Development

✦ Installation Support

✦ Life cycle maintenance

The Office of Naval Intelligence's (ONI) AMIDSHIPS civil maritime photo data base has been in place since October 1991. The data base currently used in AMIDSHIPS was developed prior to the advent of DODIIS standards.

NRaD DIV DET development objective was to bring the AMIDSHIPS data base into DODIIS compliance and to enhance current AMIDSHIPS data base capabilities for ONI, Joint Intelligence Centers (JIC) and counter drug use.

During FY 96 NRaD DIV DET assisted BTG Corp in the conversion of AMIDSHIPS to Digital AMIDSHIPS.

AMIDSHIPS was installed at JAC in Molesworth, England.

NRaD DIV DET conducted an analysis of Imagery Product Archive (IPA) integration with AMIDSHIPS.

Production updates were provided from AIC and ONI to ACI, JIATF East and JAC.

Phone and on site technical support was provided to all AMIDSHIPS sites.

NRaD DIV DET Point-of-Contact: Mr. R. Snow, Code D4221; Tel: (610) 260-4234, Naval Command, Control and Ocean Surveillance Center, RDT&E Division, Detachment, Philadelphia, Pennsylvania.
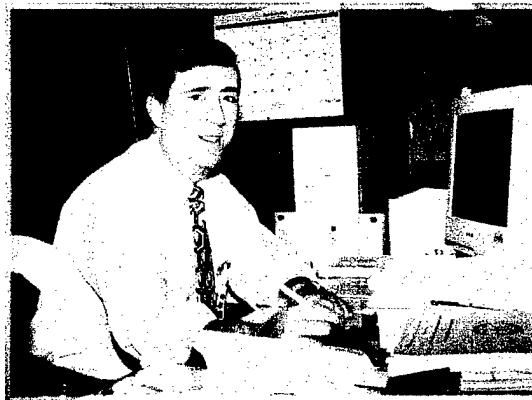
Mr. Bob Overholt

NRaD DETACHMENT HELP DESK SUPPORT

NRaD HOTLINE: (800-759-1263)

Role:

✦ **Provide a human interface between the Fleet user and the Technical Support network of NRaD DET and its customers.**

✦ **Provide life cycle support for all programs under NRaD DET's purview.**

✦ **Provide physical configuration data to the NRaD Configuration Management System.**

✦ **Provide failure data to the NRaD Logistics manager for analysis.**

As the requirement for around the clock fleet technical support and 100 % operability becomes a standard rather than the exception, the requisite for parallel Help Desk support becomes quintessential in the programs supported by NRaD DIV DET. The Help Desk provides the single point of contact to the Fleet for all support issues, having the ability to draw from all available resources to resolve conflict. Each Help Desk supports a group of related projects and provides comprehensive field services from an array of technical talent, including government and contractor personnel.

NRaD DIV DET field service representatives, in concert with the Help Desk and NRaD DIV DET Field Services Manager, support a matrix of systems and functions including but not limited to: System Operational Verification Tests (SOVT), Board of Inspections and Survey

Mr. Eddie Smith

Mr. James Kitts

Reviews (INSURV), and Combat Systems Readiness Reviews (CSRR). They will also provide refresher training and On-the-Job (OJT) type training, perform on and off site integration and installation, and perform physical and functional configuration audits.

Primarily, NRaD DIV DET Field Services developed a level of technical expertise on fielded systems that is unparalleled. The NRaD DIV DET Field Services Support team has the ability and expertise to diagnose and resolve technical problems telephonically, electronically (email or internet) or, when absolutely required, through on-site visits. Once again in FY 96, NRaD DIV DET Field Services Support team has distinguished themselves, as they were routinely lauded and cited for their "timely and expert support."

LIST OF ACRONYMS

ABL	Armored Box Launchers
AMIDSHIPS	Analog Merchant Imagery Database of Ships
AIC	Atlantic Intelligence Command
AIRLANT	Naval Air Forces, Atlantic
AIRPAC	Naval Air Forces, Pacific
AIS	Automated Information systems
AOSD	APS Operations Support Detachment
APML	Assistant Program Manager, Logistics
APPS	Analytical Photogrammetric Positioning System
APS	Afloat Planning System
APS/RD	Afloat Planning System/Rapid Development Suite
ATWCS	Advanced Tomahawk Weapons Control System
BF	Battle Force
BG	Battle Group
C^{4}I	Command, Control, Communications, Computers, and Intelligence
CBT	Computer Based Training
CDBS	Central Data Base Server
CDR	Critical Design Review
CDRL	Contract Deliverable Requirements List
CINCLANTFLT	Commander In Chief, Atlantic Fleet
CINCPACFLT	Commander In Chief, Pacific Fleet
CMSA	Cruise Missile Support Activity
CMSALANT	Cruise Missile Support Activity Atlantic
CMSAPAC	Cruise Missile Support Activity, Pacific
COI	Course of Instruction
COMNAVAIRLANT	Commander, Naval Air Forces, Atlantic
COMNAVAIRPAC	Commander, Naval Air Forces, Pacific
COMNAVSURFLANT	Commander, Naval Surface Atlantic
COMNAVSURFPAC	Commander, Naval Surface Pacific
COMOPTEVFOR	Commander, Operational Test & Evaluation Force
COMSUBLANT	Commander, Submarine Forces, U.S. Atlantic Fleet
COMSUBPAC	Commander, Submarine Forces, U.S. Pacific Fleet
CONUS	Continental United States
COR	Contracting Officer's Representative
COTS	Commercial Off-the-Shelf
CSRR	Combat Systems Readiness Review

CVIC   Carrier Intelligence Center
DB   Data Base
DBS   Data Base Server
DIA   Defense Investigative Agency
DIWS-A   Digital Imagery Work Station, Afloat
DOD   Department of Defense
DODIIS   Department of Defense Intelligence Information Systems
DON   Department of the Navy
DPL   Digital Photo Lab
DT   Development Training

ECP   Engineering Change Proposal
EDM   Engineering Development Model
EMO   Electronic Maintenance Officer
ETEPP   Electronic Tomahawk Employment Planning Package

FCSA   Functional Capabilities Systems Architecture
FIST   Fleet Image Support Terminal

GDE   General Dynamics/Electronic Division
GENSER   General Service
GFCP   Generic Front-end Communications Processor
GLCM   Ground Launch Cruise Missile

HCI   Human Computer Interface
HORSE   Human On-Line Resources Support Environment
HVAC   Heating, Ventilation, and Air Conditioning

ILS   Integrated Logistics Support
INSURV   Board of Inspections and Survey Reviews
IOT&E   Initial Operational Test and Evaluation
IPR   In-Progress Review
IRS/M   Interface Requirements Specification/Modification
ISEA   In-Service Engineering Agency
IV&V   Independent Verification and Validation

JCF   Justification/Cost Forms
JIC   Joint Intelligence Centers
JICPAC   Joint Intelligence Centers Pacific
JIP   Joint Integrated Plan
JMCIS   Joint Maritime Command Information Systems
JMOCC   Joint Maritime Operational Command Center

JSIPS-N	Joint Service Imagery Processing System - Navy
JTF	Joint Task Force
LAN	Local Area Network
MDS	Mission Display System
MDU	Mission Data Update
MHRS	Message Handler Remote Server
MIIS	Modular Imagery Interpretation Systems
MMI	Man Machine Interface
MOA	Memorandum of Agreement
MSC	Merchant Ships Characteristics
NAS	Naval Air Station
NAVAIR	Naval Air Systems Command
NAVICP	Naval Inventory Control Point
NAVSEA	Naval Sea Systems Command
NDI	Non-Developmental Item
NESEA	Naval Electronic Systems Engineering Activity
NID	National Intelligence Database
NIPS	NTCS-A Intelligence Processing Services
NIS	National Input Segment
NISE EAST DET Norfolk	Naval Command, Control and Ocean Surveillance Center In-Service Engineering - East Detachment Norfolk
NITF	National Imagery Transfer Format
NMIC	National Maritime Intelligence Center
NMID	National Maritime Intelligence Database
NMITC	Naval Marine Intelligence Training Center
NRaD	NCCOSC Research, Development, Test & Evaluation Division
NSWC	Naval Surface Weapons Center
NSWCDD	Naval Surface Weapons Center Detachment, Dahlgren
NTCS-A	Naval Tactical Command System - Afloat
N-TIS	Naval Tactical Input Segment
OJT	On-the-Job Training
ONI	Office of Naval Intelligence
OTRR	Operational Test Readiness Review
PCA	Physical Configuration Audit
PEO(CU)	Program Executive Officer Cruise Missiles Project and Unmanned Aerial Vehicles Joint Project
PIES	Photographic Image Editing System

PMP   Project Master Plan
PMR   Program Management Review
POA&M   Plan, Objective Action and Milestone
PNSY   Philadelphia Naval Ship Yard

RASS   Random Access Storage Sets
RDS   Rapid Deployment Suite
RDT&E   Research, Development, Test & Evaluation
RFP   Request for Proposal
RGB   Red, Green, Blue
RTDBM   Real Time Track Data Base

SCIF   Sensitive Compartmented Information Facility
SDX   Secure Data Transfer
SEWG   Systems Engineering Working Group
SGML   Standard Generalized Markup Language
SLCM   Sea Launch Cruise Missile
SOM   System Operator's Manual
SOP   Standard Operating Procedures
SOVT   System Operational Verification Test
SOW   Statement of Work
SSC   Surface Surveillance Contact

TACTRAGRULANT   Tactical Training Group Atlantic
TACTRAGRUPAC   Tactical Training Group Pacific
TAMPS   Tactical Aircraft Mission Planning System
TARPS   Tactical Air Reconnaissance Pod System
TECHEVAL   Technical Evaluation
TEMPEST   Transient Electromagnetic Pulse Emanation Standard
TEPP   Tomahawk Employment Planning Package
TIFF   Tagged Image File Format
TLAM   Tomahawk Land Attack Missile
TMPC   Tomahawk Mission Planning Center
TPS   Tactical Plotting System
TPS   Test Program Set
TPS   Tomahawk Planning System
TPSA   Tomahawk Planning System Afloat
TSCM   Tomahawk Strike Coordination Module

USCINCPAC CMD CTR   U.S. Pacific Fleet Command Center
USMC   United States Marine Corps

VIEWS   Visual Image Exploitation Work Station